USDA Natural Resources
Conservation Service

Ecological site R013XY030ID
North Slope Loamy 16-22 PZ

Last updated: 2/13/2025
Accessed: 05/11/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 013X–Eastern Idaho Plateaus

013X-Eastern Idaho Plateaus

Precipitation or Climate Zone: 16-22” P.Z.
https://soils.usda.gov/survey/geography/mlra/index.html

Classification relationships

Artemisia vaseyana/ Agropyron spicatum HT in “Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number “35”.

Land Resource Unit: B (Northwestern Wheat and Range)
MLRA: 13 (Eastern Idaho Plateaus)

EPA EcoRegion: Level III (Middle Rockies)

Ecological site concept

Site does not receive any additional water.
Soils are:
not saline or saline-sodic.
moderately deep, deep, very deep, with <35% stone (10-25”) and boulder (>25”) cover. Not skeletal within 20” of soil surface, fragment percentage increasing with depth
not strongly or violently effervescent in surface mineral 10”.
textures usually range from very fine sandy loam to clay loam in surface mineral 4”.
Slope is > 30%.
Clay content is = <32% in surface mineral 4”.
Site does not have an argillic horizon with > 35% clay.

Associated sites

R013XY003ID	**Steep South 16-22 PZ ARTRV/PSSPS**
R013XY005ID	**Loamy 16-22 PZ ARTRV/FEID-PSSPS**
R013XY010ID	**Mahogany North Slope 16-22 PZ CELE3/PSSPS**
R013XY015ID	**Steep Stony Mahogany 16-22 PZ CELE3-ARTRV/PSSPS**
R013XY019ID	**Stony Loam 16-22 PZ ARTRV/PSSPS**

R013XY031ID	**Steep Stony North 16-22 PZ ARTRV/FEID**

Similar sites

R013XY019ID	**Stony Loam 16-22 PZ ARTRV/PSSPS**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Symphoricarpos oreophilus*
Herbaceous	(1) *Elymus trachycaulus* (2) *Pseudoroegneria spicata subsp. spicata*

Physiographic features

This site occurs on gently sloping to moderately steep north and east facing mountain slopes. Slopes vary from 30 to 70 percent. Elevations range from 4800 to 7000 feet (1450 to 2150 meters).

Table 2. Representative physiographic features

Landforms	(1) Mountain slope (2) Hill (3) Fan remnant
Flooding frequency	None
Elevation	4,800–7,000 ft
Slope	30–70%
Water table depth	60 in
Aspect	N, E

Climatic features

MLRA 13, the Eastern Idaho Plateaus, is part of the Northwestern Wheat and Range Region. Its elevation ranges from 4209 to 9331 feet above sea level, with an average elevation of 5787 feet. The average annual precipitation is 16.41 inches, with a range of 13.56 to 18.75 inches, based on ten long term climate stations located throughout the MLRA. A spike in precipitation amount often occurs in late spring, usually in May.

Temperatures vary widely in the MLRA throughout the year. A maximum temperature of 103° Fahrenheit occurred at the McCammon climate station (# 105716; elevation 4770 feet), while a minimum of -41° was recorded at the Kilgore station (#104908). At all stations temperatures throughout the year are usually below the national average. Kilgore also recorded the greatest annual snowfall amount of 217 inches. The average temperature is 41.4 degrees F. with an average high of 55.3 degrees and an average low of 27.5 degrees.

The frost-free period ranges from 64 to 90 days, while the freeze-free period can be 98 to 123 days.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	123 days
Precipitation total (average)	19 in

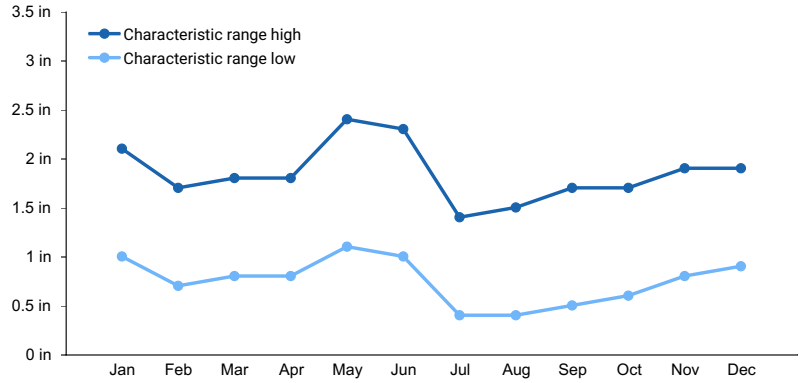


Figure 1. Monthly precipitation range

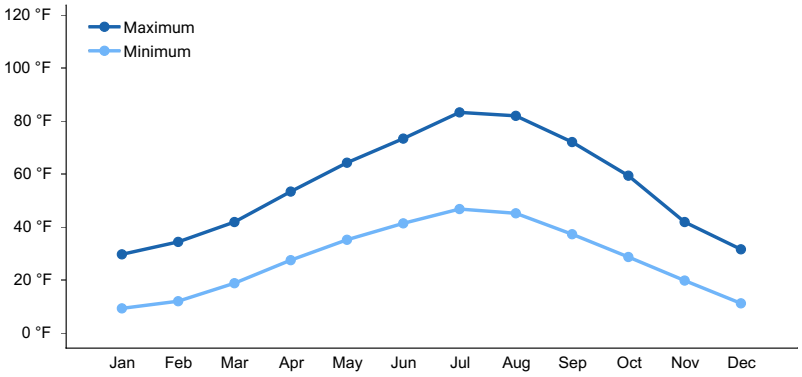


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is not influenced by adjacent wetlands, streams, or run on.

Soil features

The soils of this site are very deep, well drained, silt loam and loam. The surface layer is a thick dark colored due to the high organic material. They are underlain by medium textured layers that may contain gravel and cobbles. Intake rate is moderate and water movement through the soil is moderate. Roots readily penetrate the soil. These soils have a moderate available water holding capacity (AWC). Rock fragments are variable throughout the profile, but are less than 35 percent by volume. Under proper management, these soils have little surface runoff and slight to no erosion. The soils are characterized by a xeric soil moisture regime and either a frigid or cryic soil temperature regime.

Soil Series Correlated to this Ecological Site

Hades
Rin

Table 4. Representative soil features

Surface texture	(1) Silt loam
Drainage class	Well drained

Permeability class	Moderately slow to moderate
Soil depth	60 in
Surface fragment cover <=3"	0–15%
Available water capacity (0-40in)	6.2–8.3 in
Soil reaction (1:1 water) (0-40in)	5.6–7.3
Subsurface fragment volume <=3" (Depth not specified)	0–25%

Ecological dynamics

The dominant visual aspect of this site is mixed shrubs, bunchgrasses, and rhizomatous grasses. Composition by weight is approximately 40-50 percent grasses, 10-20 percent forbs and 35-45 percent shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold, wet winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer and Rocky Mountain elk.

Fire has historically occurred on the site at intervals of 20-35 years.

The Historic Climax Plant Community (HCPC), the Reference State (State1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase A. This plant community is co-dominated by slender wheatgrass and bluebunch wheatgrass in the understory and snowberry, Woods' rose, and serviceberry in the overstory. Subdominant species include big bluegrass, mountain brome, Letterman's needlegrass, sticky geranium, butterweed groundsel, and lupine. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 2000 pounds per acre (2222 kilograms per hectare) in a normal year. Production in a favorable year is 2900 pounds per acre (3248 kilograms per hectare). Production in an unfavorable year is 1500 pounds per acre (1680 kilograms per hectare. Structurally, cool season deep rooted perennial bunchgrasses are dominant, followed by tall shrubs being more dominant than forbs.

FUNCTION:

This site is well suited for big game in the late spring, summer, and fall. It is also well suited for livestock and recreation use in the summer and fall.

Due to the relatively high rainfall and elevation on this site, it is fairly resistant to disturbances that can potentially degrade the site.

This site has moderately low runoff potential. Runoff, when it does occur is non-erosive except during high intensity convection storms. Snow accumulates on the site due to high elevation and presence of tall shrubs.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency shrubs will increase. Grasses and forbs decrease as shrubs increase. If a Utah juniper seed source is in the vicinity, juniper will invade.

When fires become more frequent than historic levels (20-35 years), mountain big sagebrush is reduced significantly. With continued short fire frequency, big sagebrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass, slender wheatgrass, and Idaho fescue. These

species may be replaced by cheatgrass and Kentucky bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. These fine fuels will increase the fire frequency. Root sprouting shrubs such as serviceberry, Woods' rose, and mountain snowberry will increase.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of the bunchgrasses and palatable shrubs. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in mountain big sagebrush, root-sprouting shrubs, and noxious and invasive plants. If cheatgrass becomes prominent in the understory, along with other annuals, fires become more frequent. Where Kentucky bluegrass invades and becomes dominant, fire frequency may decline. Continued improper grazing management influences fire frequency by increasing fine fuels.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This can lead to gradual increases in mountain big sagebrush and Utah juniper if a seed source is in the vicinity. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Any brush management should be carefully planned as a reduction in shrubs without a suitable understory of perennial grasses can lead to an increase in fine fuels which can lead to more frequent fire intervals.

Weather influences:

Above normal precipitation in April, May, and June can dramatically increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to viable seed production. Overall plant composition is normally not affected when perennials have good vigor.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. An early, hard freeze can occasionally kill some plants.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to a reduction in fire frequency.

Influence of insects and disease:

Outbreaks can affect vegetation health but no specific data is available for this site. Mormon cricket and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak. Snow mold can reduce the vigor of mountain big sagebrush.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and lead to increased fire frequency.
Many of the annual and perennial invasive plants compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game animals use this site in the late spring, summer and fall. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff occur with the increase in shrubs and Utah juniper, if present. Desired understory species can be reduced. The increased runoff also causes sheet and rill erosion. This composition change can affect nutrient and water cycles. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long term effect is a transition to a different state.

Influence of Utah juniper invasion:

In plant communities that are invaded by Utah juniper, the species has a competitive advantage for the following reasons:
• Utah juniper is very drought tolerant.
• It has the ability to extract soil moisture from a wide range of soil depths.
• Utah juniper has high evapo-transpiration rates.
• The species intercepts rain and snow before it reaches the soil surface.
• It has the ability to grow as long as there is soil moisture and the temperature is above freezing.
• Utah juniper has a relatively rapid growth rate and is long-lived. It can readily over-top shade intolerant species which leads to mortality.
• Nutrient cycling is reduced.
• As the canopy closes, Utah juniper gains control of energy capture

As Utah juniper extracts water, other plants are unable to acquire sufficient water and nutrients to sustain growth and reproduction, thus reducing cover and biomass in the interspaces. After the canopy closes, there is sufficient soil moisture available for shallow-rooted, shade tolerant species to persist directly under the tree.

The following hydrologic impacts occur on sites invaded by Utah juniper:
• Infiltration in the interspaces is reduced.
• Run-off increases resulting in increased sheet and rill erosion with elevated sediment loads.
• Soil temperatures increase in the interspaces which results in accelerated drying of the soil surface.
• Increased bare ground in the interspaces.
• Soil moisture storage is reduced.
As bare ground and interconnectiveness of bare ground increases, flow rates are accelerated (reduction of flow sinuosity) and run-off out of the area increases.

Degradation of these systems can result in the formation of a feedback cycle in which greater Utah juniper cover and density results in greater plant and soil disturbance between the canopies.

In summary, a closed Utah juniper community takes control of the following ecological processes: (1) hydrology, (2) energy capture, and (3) nutrient cycling. The changes are primarily driven by the hydrologic processes. The development of a closed Utah juniper canopy always results in a transition across the threshold to a different state. Generally, when Utah juniper canopy cover nears 20%, the plant community is approaching the threshold.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.
Phase A to B. Develops in the absence of fire. No Utah juniper seed source in the proximity.
Phase A to C. Usually results from improper grazing management and absence of fire. A Utah juniper seed source is present.
Phase A to D. Results from one or more fires.
Phase A to E. Develops in the absence of fire and with improper grazing management. No Utah juniper seed source is present.
Phase B to A. Results from prescribed grazing management.
Phase C to A. Develops with prescribed grazing management and prescribed burning or fire.
Phase D to A. Usually results from prescribed grazing management and no fire.
Phase E to A. Results from prescribed grazing management, no fire or brush management.
Phase B to D. This develops from prescribed burning or fire.
Phase C to D. This develops from prescribed burning or fire.
Phase E to D. Results from prescribed burning or fire.

State 1 Phase D to State 2. Develops through improper grazing management and lack of fire. This site has crossed

the threshold. It is usually uneconomical to return this community to State1 through accelerated practices.

State 1 Phase E to State 2 . Develops through improper grazing management with no fire. This site has crossed the threshold. It is usually uneconomical to return this community to State1 through accelerated practices.

State 1 Phase C to State 3. Results from improper grazing management and lack of fire. This site has crossed the threshold. It is usually uneconomical to return this community to State1 through accelerated practices.

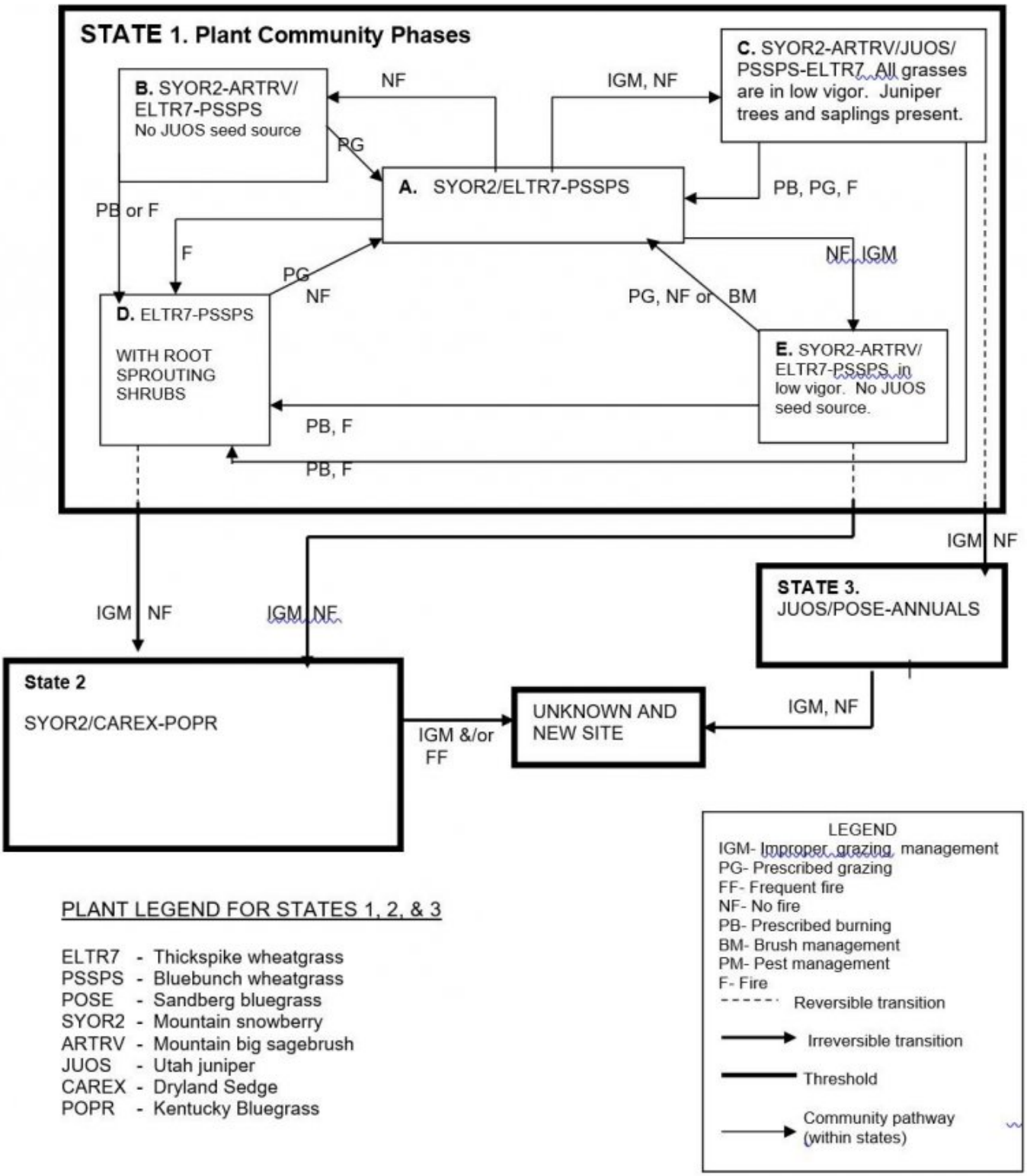
State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by improper grazing management and/or frequent fire cause this state to cross the threshold and to retrogress to a new site with reduced potential. It is usually uneconomical to return this community to State1 through accelerated practices.

State 3 to unknown site. Continued lack of fire and improper grazing management cause this state to cross the threshold and to retrogress to a new site with reduced potential due to significant soil loss and changes in hydrology.

Practice Limitations:

Severe limitations due to slope exist on this site for seeding and brush management.

State and transition model



State 1
State 1

Community 1.1
State 1 Phase A

Reference Plant Community Phase. This plant community is co-dominated by slender wheatgrass and bluebunch wheatgrass in the understory and snowberry, Woods' rose, and serviceberry in the overstory. Subdominant species include mountain big sagebrush, big bluegrass, mountain brome, Letterman's needlegrass, sticky geranium, butterweed groundsel, and lupine. Natural fire frequency is 20-35 years.

Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	60-70%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

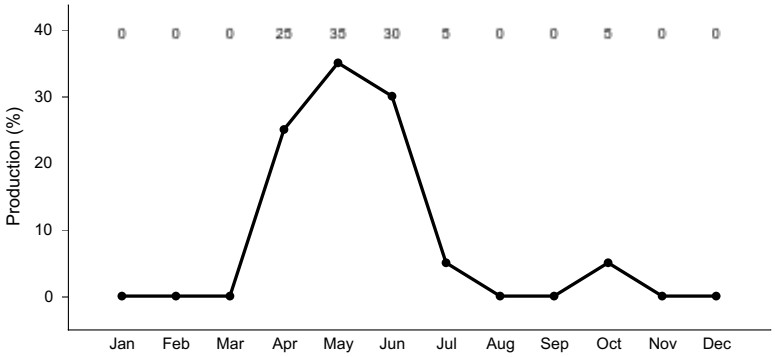


Figure 3. Plant community growth curve (percent production by month). ID0805, B13 ARTRV . State 1.

Community 1.2
State 1, Phase B.

This plant community is dominated in the overstory by snowberry. Slender wheatgrass and bluebunch wheatgrass are dominant in the understory. Mountain big sagebrush along with other shrubs is increasing. No Utah juniper seed source is present. This state has developed due to fire frequency being much longer than normal.

Community 1.3
State 1, Phase C

This plant community is dominated by snowberry in the overstory with juniper trees or saplings. Bluebunch wheatgrass and slender wheatgrass are present but in reduced amounts and typically in low vigor. This state has developed due to improper grazing management and lack of fire. A juniper seed source is in the proximity. Some Kentucky bluegrass may have invaded.

Community 1.4
State 1, Phase D

This plant community is dominated by slender wheatgrass and bluebunch wheatgrass. Root-sprouting shrubs such as snowberry, serviceberry and Woods’ rose are present. This plant community is a result of fire or prescribed burning.

Community 1.5
State 1, Phase E

This plant community is dominated by snowberry in the overstory. Mountain big sagebrush is increasing. Slender

wheatgrass and bluebunch wheatgrass are the dominant grasses in the understory but in reduced amounts and typically in low vigor. Kentucky bluegrass may be invading. This state has developed due to a lack of fire and improper grazing management. No juniper seed source is in the proximity.

Pathway 1.1A
Community 1.1 to 1.2

Develops in the absence of fire. No Utah juniper seed source in the proximity.

Pathway 1.1B
Community 1.1 to 1.3

Usually results from improper grazing management and absence of fire. A Utah juniper seed source is present.

Pathway 1.1C
Community 1.1 to 1.4

Results from one or more fires.

Pathway 1.1D
Community 1.1 to 1.5

Develops in the absence of fire and with improper grazing management. No Utah juniper seed source is present.

Pathway 1.2A
Community 1.2 to 1.1

Results from prescribed grazing management.

Pathway 1.2B
Community 1.2 to 1.4

This develops from prescribed burning or fire.

Pathway 1.3A
Community 1.3 to 1.1

Develops with prescribed grazing management and prescribed burning or fire.

Pathway 1.3B
Community 1.3 to 1.4

This develops from prescribed burning or fire.

Pathway 1.4A
Community 1.4 to 1.1

Usually results from prescribed grazing management and no fire.

Pathway 1.5A
Community 1.5 to 1.1

Results from prescribed grazing management, no fire or brush management.

Pathway 1.5B
Community 1.5 to 1.4

Results from prescribed burning or fire.

State 2
State 2

This plant community is dominated by snowberry, dryland sedge, and Kentucky bluegrass. This state has developed due to improper grazing management and the absence of fire. Some soil loss has occurred. This site has crossed the threshold. It is usually uneconomical to return this community to State1 through accelerated practices.

State 3
State 3

This plant community is dominated by Utah juniper. Remnants of bluebunch wheatgrass and slender wheatgrass can be found in the understory, often under trees. Shallow-rooted grasses, such as Sandberg bluegrass and other annuals can be found in the interspaces. Few shrubs are present. Some soil loss has occurred. This state has developed with improper grazing management and in the absence of fire. When shrub cover is below 10-15%, bare ground is above 25-30%, and juniper cover is greater than 20%, the site has crossed the threshold. It is usually uneconomical to return this community to State 1 through accelerated practices.

State 4
State 4

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires from State 2 or improper grazing management and the continued absence of fire from State 3 where Utah juniper dominates the site. This site will not return to State 1 or 2 because of significant soil loss.

Transition T1A
State 1 to 2

State 1 Phase D to State 2. Develops through improper grazing management and lack of fire. This site has crossed the threshold. It is usually uneconomical to return this community to State1 through accelerated practices. State 1 Phase E to State 2 . Develops through improper grazing management with no fire. This site has crossed the threshold. It is usually uneconomical to return this community to State1 through accelerated practices.

Transition T1B
State 1 to 3

State 1 Phase C to State 3. Results from improper grazing management and lack of fire. This site has crossed the threshold. It is usually uneconomical to return this community to State1 through accelerated practices.

Transition T2A
State 2 to 4

Excessive soil loss and changes in the hydrologic cycle caused by improper grazing management and/or frequent fire cause this state to cross the threshold and to retrogress to a new site with reduced potential. It is usually uneconomical to return this community to State1 through accelerated practices.

Transition T3A
State 3 to 4

Continued lack of fire and improper grazing management cause this state to cross the threshold and to retrogress to a new site with reduced potential due to significant soil loss and changes in hydrology.

Additional community tables

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides habitat for many native wildlife species. The plant community exhibits a diverse mixture of forbs throughout the growing season offering excellent habitat for invertebrates. Mule deer and elk utilize the site throughout the year. The rangeland provides seasonal habitat for resident and migratory animals including western toad, shrews, bats, ground squirrels, mice, coyote, red fox, badger, Ferruginous hawk, and prairie falcon. Wyoming ground squirrel, Virginia's warbler, Idaho pocket gopher, ring-necked snake, and Merriam's shrew are area sensitive species that may be associated with this site. Water features are sparse provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 – Mountain Snowberry/ Thickspike Wheatgrass/ Bluebunch Wheatgrass Reference Plant Community (RPC): This plant community provides a diversity of grasses, forbs, and shrubs used by native insect communities that assist in pollination. An extensive array of forbs is represented throughout the growing season leading to a diverse insect community. Many avian and mammal species utilize this habitat based on the availability of invertebrate prey species. The reptile and amphibian community is represented by common sagebrush lizard, western rattlesnake, Great Basin spadefoot toad, western toad, and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Development of spring sites that collect all available water would exclude amphibian use on these sites. Native shrub-steppe obligate bird species utilizing the habitat include the Brewer's sparrow, sage sparrow, sage grouse, and sage thrasher. The plant community provides year-round food and cover for mule deer and elk. Winter habitat is provided for mule deer and elk. Mountain snowberry, wood's rose, and serviceberry are desirable browse year round for mule deer and antelope while desirable in the fall and winter for elk. A diverse small mammal population including golden-mantled ground squirrels, jackrabbits, deer mice, and Great Basin pocket mice would utilize this plant community.

State 1 Phase 1.2- Mountain Snowberry/ Mountain Big Sagebrush/ Thickspike Wheatgrass/ Bluebunch Wheatgrass Plant Community: This phase has developed due to fire return interbals being much longer than normal. An increase in canopy cover of snowberry and sagebrush contributes to a decline in herbaceous understory. Invertebrate diversity and populations would be similar to those in State 1 Phase 1.1. The reptile community will be similar to the State 1 Phase 1.1 community represented by common sagebrush lizard and western rattlesnake. Sagebrush will provide brood-rearing habitat, winter cover, and winter food for sage-grouse. The plant community provides year-round food habitat for mule deer and elk. Mountain snowberry, wood's rose, and serviceberry are desirable browse for mule deer, elk, and pronghorn. A diverse small mammal population may include Idaho pocket gopher, golden-mantled ground squirrels, marmots, and chipmunks.

State 1 Phase 1.3- Mountain Snowberry/ Mountain Big Sagebrush/ Utah Juniper/ Bluebunch Wheatgrass/ Thickspike Wheatgrass Plant Community: This plant community is the result of improper grazing management and no fire. An increase in canopy cover of sagebrush and juniper contributes to a sparse herbaceous understory. A reduced herbaceous understory results in lower diversity and numbers of insects. The reptile and amphibian community will be similar to the State 1 Phase 1.1 community, represented by common sagebrush lizard, western rattlesnake, Great Basin spadefoot toad, and western toad. The reduced diversity of insects and loss of understory cover may reduce the quality of food and cover for reptile populations. As juniper increases, habitat for Brewer's sparrow, sage thrasher, and sage sparrow may increase. Remaining sagebrush provides brood-rearing, winter cover, and winter food habitat for sage-grouse but as juniper encroaches, the quality of this habitat is severely reduced or eliminated. The plant community supports limited seasonal habitat for mule deer and elk. Juniper can provide winter habitat (cover and food) for mule deer. As juniper encroaches the site will provide additional thermal cover for large mammals. The small mammal population would be similar to the State 1 Phase 1.1 animal community.

State 1 Phase 1.4 - Thickspike Wheatgrass/ Bluebunch Wheatgrass Plant Community: This plant community is a result of recent wildfire, prescribed burning, or brush management. The plant community, dominated by herbaceous vegetation would provide less vertical structure for animals. Patches of root sprouting shrubs (snowberry, serviceberry, and wood's rose) may be present and provide limited vertical structure for wildlife over time. Insect diversity would be reduced but a native forb plant community similar to the one in State 1 Phase 1.1 would still support select pollinators. Habitat for common sagebrush lizard, Great Basin spadefoot toad, and western toad

would be limited due to the reduction of shrub canopy. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude the use of amphibians on these sites. The dominance of herbaceous vegetation with sparse brush cover would limit use of these areas as nesting habitat by Brewer's sparrow, sage sparrow, sage grouse, and sage thrasher. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark, savannah sparrow, vesper sparrow, and western meadowlark). Mule deer and elk use would be seasonal but the site would offer little thermal or young of year cover due to the loss of shrub cover. The populations of small mammals would be dominated by open grassland species. Large blocks of this plant community would fragment the reference plant community and reduce the quality of habitat for shrub-steppe obligate animal species.

State 1 Phase 1.5 - Mountain Snowberry/ Mountain Big Sagebrush/ Thickspike Wheatgrass/ Bluebunch Wheatgrass Plant Community: This plant community is the result of improper grazing management and no fire. An increase in canopy cover of sagebrush and mountain snowberry contributes to a sparse herbaceous understory. The reduced herbaceous understory results in lower diversity of insects. The reptile and amphibian community will be similar to the State 1 Phase 1.1 community, represented by common sagebrush lizard, western rattlesnake, Great Basin spadefoot toad, and western toad. The reduced diversity of insects may reduce reptile diversity and populations. Reduced herbaceous understory is a factor limiting the use of this plant community by avian species. As sagebrush increases, habitat for shrub-steppe obligate birds including Brewer's sparrow, sage sparrow, and sage thrasher may increase in value. Habitat (brood-rearing and nesting cover) quality for sage-grouse is limited due to a less diverse herbaceous plant community. Winter habitat (cover and food) for sage-grouse may be provided. The reduced vigor of understory vegetation provides a shorter forage season for mule deer and elk. Young of year cover would be provided for deer and elk. Mountain snowberry, wood's rose, and serviceberry would provide desirable browse for mule deer and elk. Small mammal diversity and populations would be similar to those in State 1 Phase 1.1.

State 2 - Mountain Snowberry/ Dryland Sedge/ Kentucky Bluegrass Plant Community:
This state has developed due to continued improper grazing management and the absence of fire. The reduced diversity of forbs and shrubs would support a limited population of pollinators. Habitat for sagebrush lizard, Great Basin spadefoot toad, and western toad would decrease due to the reduced diversity of shrubs. This plant community does not provide quality habitat for sage thrasher, Brewer's sparrow, sage-grouse, or sage sparrow. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the spring and fall when the herbaceous vegetation is more palatable. The populations of small mammals would similar to those in State 1 Phase 1.1.

State 3 – Utah Juniper/ Sandberg Bluegrass/ Annuals: This state has developed due to improper grazing management and no fire. The loss of native understory vegetation will reduce insect diversity on the site. Habitat for sagebrush lizard, Great Basin spadefoot toad, and western toad would be limited due to the loss of shrub cover. This plant community does not support the habitat requirements for sage-grouse. Birds using this site as resident or migratory habitat include Juniper titmouse, western bluebird, and Virginia's warbler. The Juniper titmouse relies heavily on juniper seeds for winter food. Hunting success by raptors on this site may decrease due to a heavy overstory of juniper. Hunting success by raptors on adjacent ecological sites may increase due to increased availability of perch and roosting sites provided by junipers. The plant community supports limited seasonal habitat for mule deer and elk in spring and fall. The encroachment of junipers may increase winter habitat value for mule deer. As juniper encroaches the site will provide additional thermal cover and young of year cover for large mammals.

Grazing Interpretations.

This site is well suited for livestock use in the summer and fall.
Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Hydrological functions

Soils on this site are in hydrologic group B. They have moderately low runoff potential.

Snow accumulates on the site due to high elevation and presence of tall shrubs.

Recreational uses

This site is well suited for recreation use in the summer and fall by big game hunters, hikers, and sightseers.

Wood products

none

Other products

none

Other information

Field Offices

American Falls, ID
Blackfoot, ID
Burley, ID
Driggs, ID
Fort Hall, ID
Idaho Falls, ID
Malad, ID
Pocatello, ID
Rexburg, ID
Soda Springs, ID
St. Anthony, ID

Revision Notes: “Previously Approved” Provisional
This Provisional ecological site concept has passed Quality Control (QC) and Quality Assurance (QA) to ensure that the site meets the 2014 NESH standards for a Provisional ecological site description. This is an updated “Previously Approved” ESD that represents a first-generation tier of documentation that, prior to the release of the 2014 National Ecological Site Handbook (NESH), met all requirements as an “Approved” ESD as laid out in the 1997 (rev.1, 2003) National Range and Pasture Handbook (NRPH). The document fully described the Reference State and Community Phase in the State-and-Transition model. All other alternative states are at least described in narrative form. The “Previously Approved” ESD has been field-tested for a minimum of five years and is a proven functional document for conservation planning. The “Previously Approved” ESD does not contain all tabular and narrative entries as required in the current “Approved” level of documentation, but it is expected that the “Previously Approved” ESD will continue refinement toward an “Approved” status.

Site Development and Testing Plan:
Future work, as described in a Project Plan, is necessary to validate the information in this Provisional Ecological Site Description. This will include field activities to collect low-, medium-, and high-intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. The final field review, peer review, quality control, and quality assurance reviews of the ESD will be required to produce the final document.

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:
Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC
Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC
Jim Cornwell, Range Management Specialist, IASCD
Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho
Lee Brooks, Range Management Specialist, IASCD
Kristen May, Resource Soil Scientist, NRCS, Idaho

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number “35”.
Petersen, S.L., 2004. A Landscape-Scale Assessment of Plant Communities, Hydrologic Processes, and State-and-Transition Theory in a Western Juniper Dominated Ecosystem. PhD Dissertation. Oregon State University, Corvallis, Oregon.
USDA, NRCS.2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov.). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.
USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Approval

Kirt Walstad, 2/13/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Dave Franzen and Jacy Gibbs Intermountain Range Consultants 17700 Fargo Rd. Wilder, ID 83676
Contact for lead author	Brendan Brazee, State Rangeland Management Specialist USDA-NRCS 9173 W. Barnes Drive, Suite C, Boise, ID 83709
Date	05/15/2008
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills rarely occur on this site. If rills are present they are likely to occur on the steeper slopes and immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam.

2. **Presence of water flow patterns:** water flow patterns do occur on the site. They occur as short and disrupted flows. They are disrupted by cool season grasses and tall shrubs and are not extensive.

3. **Number and height of erosional pedestals or terracettes:** both are rare on this site. Where flow patterns and/or rills are present, a few pedestals may be expected. Terracettes can occur as deposits behind large bunchgrasses and shrubs. They are not extensive.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available. On sites in mid-seral status bare ground may range from 15-25 percent.

5. **Number of gullies and erosion associated with gullies:** none.

6. **Extent of wind scoured, blowouts and/or depositional areas:** usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move up to 3 feet following a significant run-off event. Coarse litter generally does not move.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** values should range from 4 to 6 but needs to be tested.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** structure typically includes weak and moderate very fine and fine granular to weak fine subangular blocky. Soil organic matter (SOM) ranges from 1 to 4 percent. Surface color is generally very dark brown. The surface horizon is typically 9 to 26 inches thick.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** structure typically includes weak fine granular. Soil organic matter (SOM) ranges from _____percent. The surface horizon is typically _____inches thick.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** not present

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: cool season deep-rooted perennial bunchgrasses

Sub-dominant: tall shrubs

Other: perennial forbs

Additional: shallow rooted bunchgrasses

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** mountain big sagebrush and serviceberry will become decadent in the absence of fire and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase.

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14. **Average percent litter cover (%) and depth (in):** fine litter in the interspaces may move up to 3 feet following a significant run-off event. Coarse litter generally does not move.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 2000 pounds per acre (2240 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 40-50 percent of the total production, forbs 10-20 percent and shrubs 35-45 percent.

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** includes cheatgrass, Kentucky bluegrass, whitetop, rush skeletonweed, leafy spurge, musk, Canadian and scotch thistle, and diffuse and spotted knapweed.

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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.
